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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,395	07/06/2001	Lior Ophir	TI-32591	5107

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TEXAS INSTRUMENTS INCORPORATED  
P O BOX 655474, M/S 3999  
DALLAS, TX 75265

EXAMINER
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HA, DAC V

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/900,395

**Applicant(s)**

OPHIR, LIOR

**Examiner**

Dac V. Ha

**Art Unit**

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1-18 are objected to because of the following informalities:

Claim 1, line 4, "the group" should be changed to "a group".

Claim 2, all parameters "N", "K", "k", "n" should be clearly defined (i.e. integer).

Claim 8, all parameters "N", "K", "b", should be clearly defined (i.e. integer).

Claim 18, all parameters "N", "K", "b", should be clearly defined (i.e. integer).

Claim 14, line 3, "the group" should be changed to "a group".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 14 recite "a inner coded encoder selected from the group consisting of (a trellis coded modulator (TCM) and a turbo trellis coded modulator (TTCM) encoder)". It is not clear the recitation in the parentheses are part of the claim or not.

Similar problem exists in claim 2, line 7; claim 9, line 7; claim 18, line 7.

### ***Claim Rejections - 35 USC § 103***

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pik et al. (US 5,321,725) (hereafter Paik) in view of Seshadri et al. (US 6,584,593) (hereafter Seshadri).

**Regarding claim 1**, Paik discloses a coding method including "having an inner coded encoder" "processing a desired binary coded input bit stream via at least the outer code encoder and interleaver to provide a desired inner bit stream; and processing the desired inner bit stream via at least the inner encoder and the mapping element to generate a plurality of N symbols" in Fig. 1, elements 12, 18, 20; Fig. 2; col. 7, line 62 to col. 10, line 20. Paik differs from the claimed invention in that Paik does not disclose the inner encoder (Fig. 1, element 20) is "selected from the group consisting of (a trellis coded modulator (TCM) and a turbo trellis coded modulator (TTCM) encoder)". However, Paik clearly indicates that encoder 20 utilizing TCM for a number of advantages (col. 2, lines 5-29). In attention is now directed to Seshadri, who discloses an improved communication (i.e. coding) realized with turbo TCM (Abstract; col. 2, line 36). Since turbo TCM provides even more advantages than TCM, a person of ordinary skill in the art at the time of the invention would have been motivated to incorporate the capability of utilizing turbo TCM of Seshadri into the TCM encoder of Paik to optimize the encoding process, thus improving signal detection at the receiving end.

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**Regarding claim 14**, see claim 1 and Paik, Fig. 1, and 3; col. 12, lines 11-65.

**Regarding claim 17**, the claimed subject matter “wherein the step of generating a plurality of symbols comprises the step of generating a signal constellation having shaping regions capable of use in association with shell mapping that is compatible with rate  $k/n$  coded modulation selected from the group consisting of trellis coded modulation (TCM) and turbo-trellis coded modulation (TTCM)” would have been obvious to one skilled in the art based on Paik and Seshadri.

**Regarding claims 15, 16**, these claimed subject matter would have been design specific, thus optional to one skilled in the art.

#### ***Allowable Subject Matter***

6. Claims 2-13, 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lee (US 6,584,140) discloses Spectrum Efficient Fast Frequency Hopped Modem With Coherent Demodulation.

Alamouti et al. (US 5,838,728) disclose High Rate Reed-Solomon Concatenated Trellis Coded 16 star QAM System For Transmission Of Data Over Cellular Mobile Radio.

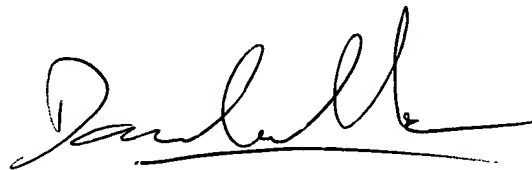
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dac V. Ha whose telephone number is 571-273-3040.

The examiner can normally be reached on 5/4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Dac V. Ha', with a horizontal line underneath.

Dac V. Ha  
Examiner  
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